

## Section 10. Renewable Energy

**Sources.** The Nation consumed 5.9 quadrillion Btu of renewable energy in 2002, accounting for 6 percent<sup>1</sup> of total energy consumption during the year. At 2.7 quadrillion Btu, conventional hydroelectric power was the largest component of the renewable energy total, measuring 45 percent of the total. Wood was the next largest component at 2.0 quadrillion Btu and 34 percent of the total. Waste, the third largest component of the renewable energy total, contributed 0.6 quadrillion Btu in 2002, a 9-percent share of the total.

**Electric Power Sector.** In 2002, the electric power sector consumed 3.5 quadrillion Btu of renewable energy resources, 1.1 quadrillion Btu more than all of the end-use sectors combined and a share of 59 percent of the total. Conventional hydroelectric power recorded 2.6 quadrillion Btu in 2002, for 75 percent of the electric power sector total. Waste, at 0.3 quadrillion Btu, was the second largest

source consumed for electricity generation, followed by geothermal and wood.

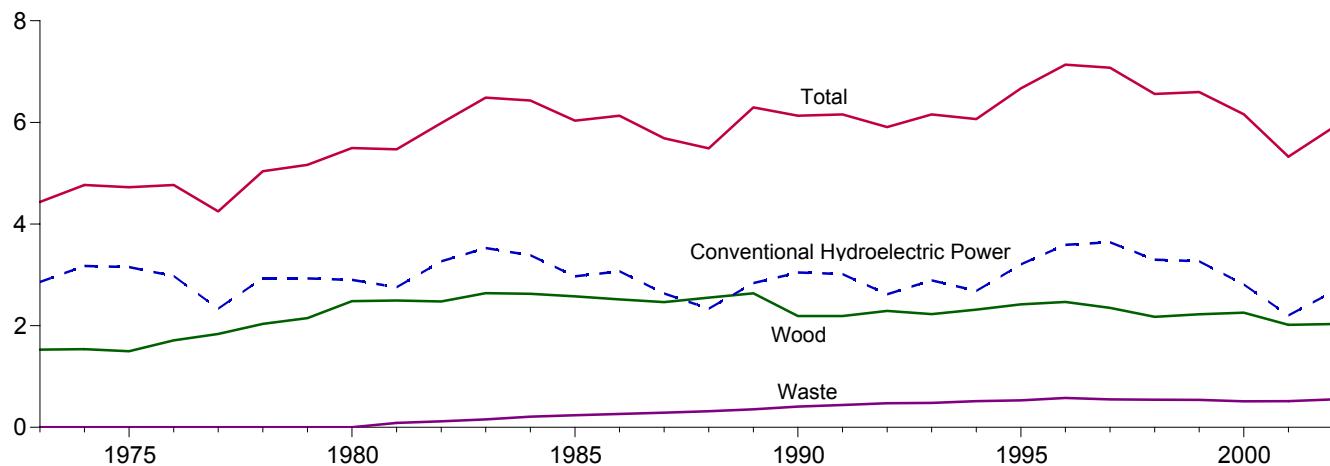
**End-Use Sectors.** Of the end-use sectors, the industrial sector was the largest consumer of renewable energy in 2002. Industrial facilities used 1.7 quadrillion Btu of renewable energy in 2002, 87 percent in the form of wood. The residential sector was the next largest end-use sector in the use of renewable energy, consuming 0.4 quadrillion Btu—84 percent in the form of wood, 14 percent solar, and 2 geothermal. The transportation sector consumed renewable energy in the form of alcohol fuels used in the blending of motor gasoline; in 2002, alcohol fuel use was 0.2 quadrillion Btu. The commercial sector used 0.1 quadrillion Btu in 2002, 48 percent of it as waste and 42 percent as wood.

In the April *Monthly Energy Review*, data were revised in this section for several reasons, including: (1) Electricity net imports that are derived from hydroelectric power and geothermal energy are no longer included in the renewable energy consumption totals that are shown on Tables 10.1 and 10.2c. Those quantities continue to be included in total U.S. energy consumption as components of electricity net imports, with fuel sources unspecified (see Tables 1.3 and 2.6). The change results in a 0.1-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1973 forward. (2) Wood and waste energy consumption data for 1989-2002 are revised; biomass data are now developed by aggregating individual power plant data for nonutilities instead of applying a generalized net generation figure. (3) Hydropower, solar, geothermal, and wind energy consumption data for 1989-2002 are revised as a result of a thorough review of historical nonutility electric plant data.

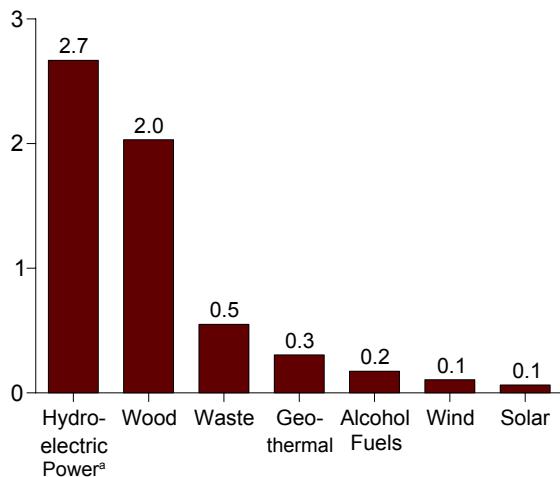
<sup>1</sup>A small amount of alcohol fuel (ethanol blended into motor gasoline) is both fossil fuel (as petroleum) and renewable energy and is counted in both those subtotals but counted only once in total energy consumption.

**Figure 10.1 Renewable Energy Consumption**  
(Quadrillion Btu)

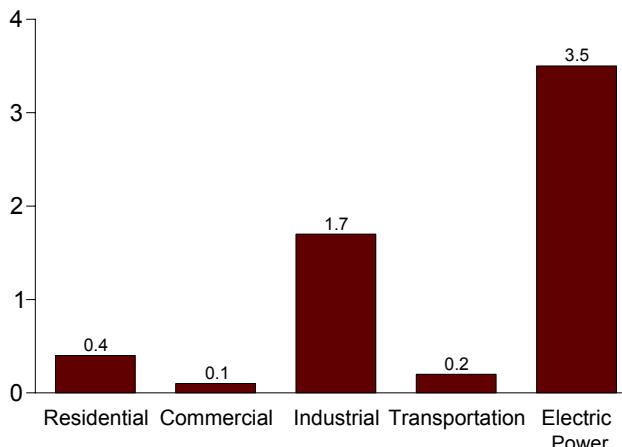
Total and Major Sources, 1973-2002



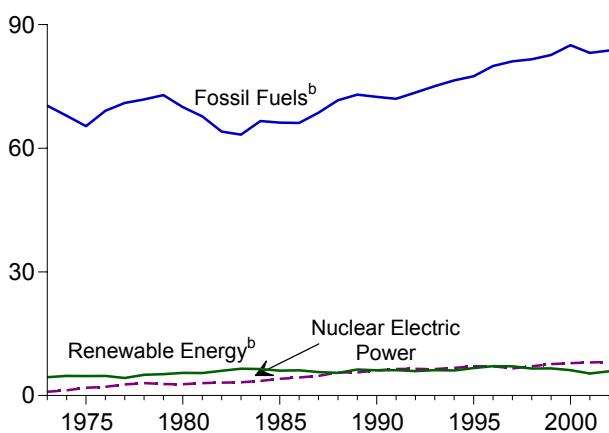
By Source, 2002



By Sector, 2002



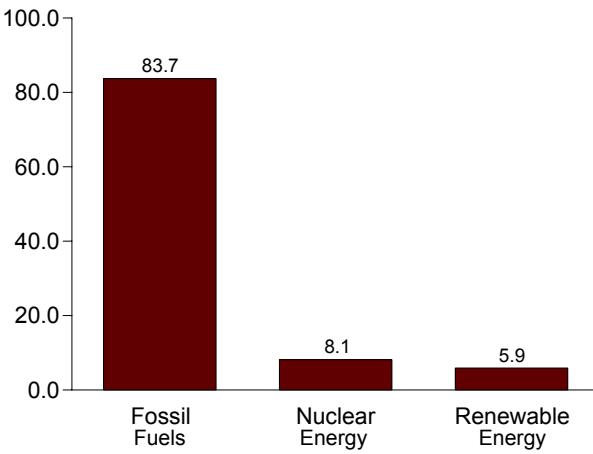
Compared With Other Resources, 1973-2002



<sup>a</sup>Conventional hydroelectric power.

<sup>b</sup>A small amount of alcohol (ethanol blended into motor gasoline) is both fossil fuel (as petroleum) and renewable energy and is counted in both

Compared With Other Resources, 2002



those subtotals but counted only once in total energy consumption.

Sources: Tables 1.3 and 10.1-10.2c

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

**Table 10.1 Renewable Energy Consumption by Source**  
(Trillion Btu)

	Conventional Hydroelectric Power <sup>a</sup>	Wood <sup>b</sup>	Waste <sup>c</sup>	Alcohol Fuels <sup>d</sup>	Geothermal <sup>e</sup>	Solar <sup>f</sup>	Wind <sup>g</sup>	Total
1973 Total .....	2,861	1,527	2	NA	43	NA	NA	4,433
1974 Total .....	3,177	1,538	2	NA	53	NA	NA	4,769
1975 Total .....	3,155	1,497	2	NA	70	NA	NA	4,723
1976 Total .....	2,976	1,711	2	NA	78	NA	NA	4,768
1977 Total .....	2,333	1,837	2	NA	77	NA	NA	4,249
1978 Total .....	2,937	2,036	1	NA	64	NA	NA	5,039
1979 Total .....	2,931	2,150	2	NA	84	NA	NA	5,166
1980 Total .....	2,900	2,483	2	NA	110	NA	NA	5,494
1981 Total .....	2,758	2,495	88	7	123	NA	NA	5,471
1982 Total .....	3,266	2,477	119	19	105	NA	NA	5,985
1983 Total .....	3,527	2,639	157	35	129	NA	(s)	6,488
1984 Total .....	3,386	2,629	208	43	165	(s)	(s)	6,431
1985 Total .....	2,970	2,576	236	52	198	(s)	(s)	6,033
1986 Total .....	3,071	2,518	263	60	219	(s)	(s)	6,132
1987 Total .....	2,635	2,465	289	69	229	(s)	(s)	5,687
1988 Total .....	2,334	2,552	315	70	217	(s)	(s)	5,489
1989 Total .....	2,837	2,637	354	71	317	55	22	6,294
1990 Total .....	3,046	2,191	408	63	336	60	29	6,133
1991 Total .....	3,016	2,190	440	73	346	63	31	6,158
1992 Total .....	2,617	2,290	473	83	349	64	30	5,907
1993 Total .....	2,892	2,227	479	97	364	66	31	6,156
1994 Total .....	2,683	2,315	515	109	338	69	36	6,065
1995 Total .....	3,205	2,420	531	117	294	70	33	6,669
1996 Total .....	3,590	2,467	577	84	316	71	33	7,137
1997 Total .....	3,640	2,350	551	106	325	70	34	7,075
1998 Total .....	3,297	2,175	542	117	328	70	31	6,561
1999 Total .....	3,268	2,224	540	122	331	69	46	6,599
2000 Total .....	2,811	2,257	511	139	317	66	57	6,158
<b>2001</b>								
January .....	191	177	R 43	15	28	5	4	R 463
February .....	177	157	38	12	24	5	4	418
March .....	R 208	169	43	12	27	5	5	470
April .....	R 183	165	43	11	25	5	7	438
May .....	R 195	R 162	R 42	11	24	6	6	447
June .....	210	165	43	12	25	6	7	467
July .....	183	R 170	45	11	27	6	6	449
August .....	192	R 174	44	10	26	6	6	459
September .....	R 155	165	42	12	26	6	5	410
October .....	R 155	175	43	16	26	5	6	426
November .....	156	167	43	13	26	5	5	415
December .....	196	171	45	13	27	5	6	463
<b>Total</b> .....	R 2,201	R 2,017	R 514	147	311	65	68	5,324
<b>2002</b>								
January .....	219	177	47	13	27	5	8	496
February .....	204	156	41	12	24	5	7	449
March .....	213	167	46	12	26	5	9	R 479
April .....	248	168	45	12	24	5	11	512
May .....	R 274	167	46	14	26	6	11	542
June .....	287	170	46	12	24	6	12	556
July .....	257	176	48	15	26	6	9	R 537
August .....	210	172	46	14	26	6	10	484
September .....	168	170	46	15	25	5	8	437
October .....	171	172	46	17	26	5	8	R 446
November .....	198	165	45	20	25	5	7	R 465
December .....	R 218	171	48	19	26	5	8	494
<b>Total</b> .....	R 2,668	2,031	550	174	304	64	106	R 5,897
<b>2003</b>								
January .....	199	165	44	17	26	5	6	462
February .....	239	R 161	R 43	20	23	5	R 8	R 499
March .....	279	158	45	17	29	5	10	542
<b>3-Month Total</b> .....	<b>717</b>	<b>484</b>	<b>132</b>	<b>54</b>	<b>78</b>	<b>15</b>	<b>24</b>	<b>1,503</b>
<b>2002 3-Month Total</b> .....	<b>636</b>	<b>501</b>	<b>134</b>	<b>37</b>	<b>77</b>	<b>15</b>	<b>24</b>	<b>1,424</b>
<b>2001 3-Month Total</b> .....	<b>576</b>	<b>503</b>	<b>124</b>	<b>39</b>	<b>79</b>	<b>15</b>	<b>14</b>	<b>1,351</b>

<sup>a</sup> Hydroelectricity generated by pumped storage is not included in renewable energy.

<sup>b</sup> Wood, black liquor, and other wood waste.

<sup>c</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

<sup>d</sup> Ethanol blended into motor gasoline.

<sup>e</sup> Geothermal electricity net generation, heat pump, and direct use energy.

<sup>f</sup> Solar thermal and photovoltaic electricity net generation, and solar thermal

direct use energy.

<sup>g</sup> Wind electricity net generation.

R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: Tables 10.2a, 10.2b, and 10.2c.

Beginning with the April 2003 *Monthly Energy Review*, electricity net imports derived from hydroelectric power and geothermal energy are no longer included in renewable energy consumption data but continue to be included in total U.S. energy consumption. See Tables 1.3 and 2.6.

**Table 10.2a Estimated Renewable Energy Consumption:  
Residential and Commercial Sectors  
(Trillion Btu)**

	Residential Sector				Commercial Sector <sup>a</sup>				
	Wood <sup>b</sup>	Geothermal <sup>c</sup>	Solar <sup>d</sup>	Total	Hydropower <sup>e</sup>	Wood <sup>b</sup>	Waste <sup>f</sup>	Geothermal <sup>c</sup>	Total
1973 Total .....	354	NA	NA	354	NA	7	NA	NA	7
1974 Total .....	371	NA	NA	371	NA	7	NA	NA	7
1975 Total .....	425	NA	NA	425	NA	8	NA	NA	8
1976 Total .....	482	NA	NA	482	NA	9	NA	NA	9
1977 Total .....	542	NA	NA	542	NA	10	NA	NA	10
1978 Total .....	622	NA	NA	622	NA	12	NA	NA	12
1979 Total .....	728	NA	NA	728	NA	14	NA	NA	14
1980 Total .....	859	NA	NA	859	NA	21	NA	NA	21
1981 Total .....	869	NA	NA	869	NA	21	NA	NA	21
1982 Total .....	937	NA	NA	937	NA	22	NA	NA	22
1983 Total .....	925	NA	NA	925	NA	22	NA	NA	22
1984 Total .....	923	NA	NA	923	NA	22	NA	NA	22
1985 Total .....	899	NA	NA	899	NA	24	NA	NA	24
1986 Total .....	876	NA	NA	876	NA	27	NA	NA	27
1987 Total .....	852	NA	NA	852	NA	29	NA	NA	29
1988 Total .....	885	NA	NA	885	NA	32	NA	NA	32
1989 Total .....	918	5	53	976	1	36	22	3	61
1990 Total .....	581	6	56	642	1	39	28	3	71
1991 Total .....	613	6	58	677	1	41	26	3	72
1992 Total .....	645	6	60	711	1	44	32	3	81
1993 Total .....	548	7	62	616	1	46	33	3	84
1994 Total .....	537	6	64	607	1	46	35	4	86
1995 Total .....	596	7	65	667	1	46	40	5	92
1996 Total .....	595	7	65	667	1	50	53	5	110
1997 Total .....	433	8	65	506	1	49	58	6	113
1998 Total .....	387	8	65	459	1	48	54	7	111
1999 Total .....	414	9	64	486	1	52	54	7	114
2000 Total .....	433	9	61	503	1	53	47	8	109
2001 January .....	35	1	5	40	(s)	4	3	1	7
February .....	31	1	5	37	(s)	3	3	1	7
March .....	35	1	5	40	(s)	4	3	1	7
April .....	33	1	5	39	(s)	3	3	1	7
May .....	35	1	5	40	(s)	4	3	1	R 7
June .....	33	1	5	39	(s)	3	3	1	8
July .....	35	1	5	40	(s)	4	4	1	8
August .....	35	1	5	40	(s)	4	4	1	8
September .....	33	1	5	39	(s)	3	3	1	7
October .....	35	1	5	40	(s)	3	3	1	7
November .....	33	1	5	39	(s)	3	3	1	7
December .....	35	1	5	40	(s)	4	3	1	8
<b>Total .....</b>	<b>407</b>	<b>9</b>	<b>60</b>	<b>476</b>	<b>1</b>	<b>41</b>	<b>39</b>	<b>8</b>	<b>R 89</b>
2002 January .....	30	1	5	36	(s)	4	4	1	8
February .....	27	1	4	32	(s)	3	3	1	7
March .....	30	1	5	36	(s)	4	4	1	8
April .....	29	1	5	34	(s)	3	4	1	8
May .....	30	1	5	36	(s)	3	4	1	8
June .....	29	1	5	34	(s)	3	4	1	8
July .....	30	1	5	36	(s)	3	4	1	8
August .....	30	1	5	36	(s)	3	4	1	8
September .....	29	1	5	34	(s)	3	4	1	8
October .....	30	1	5	36	(s)	3	4	1	9
November .....	29	1	5	34	(s)	3	4	1	8
December .....	30	1	5	36	(s)	4	4	1	8
<b>Total .....</b>	<b>350</b>	<b>10</b>	<b>58</b>	<b>419</b>	<b>1</b>	<b>41</b>	<b>47</b>	<b>9</b>	<b>97</b>
2003 January .....	30	1	5	36	(s)	4	3	1	7
February .....	27	1	4	32	(s)	3	RF 3	1	R 7
March .....	30	1	5	36	(s)	3	F 3	1	7
<b>3-Month Total ....</b>	<b>86</b>	<b>3</b>	<b>14</b>	<b>103</b>	<b>(s)</b>	<b>10</b>	<b>E 9</b>	<b>2</b>	<b>21</b>
<b>2002 3-Month Total ....</b>	<b>86</b>	<b>3</b>	<b>14</b>	<b>103</b>	<b>(s)</b>	<b>10</b>	<b>11</b>	<b>2</b>	<b>24</b>
<b>2001 3-Month Total ....</b>	<b>100</b>	<b>2</b>	<b>15</b>	<b>117</b>	<b>(s)</b>	<b>10</b>	<b>9</b>	<b>2</b>	<b>22</b>

<sup>a</sup> Commercial sector fuel use, including that at commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See note at end of Section 7.

<sup>b</sup> Wood, black liquor, and other wood waste.

<sup>c</sup> Geothermal heat pump and direct use energy.

<sup>d</sup> Solar thermal direct use energy and photovoltaic electricity generation. Small amounts of commercial sector use are included in the residential sector.

<sup>e</sup> Conventional hydroelectric power.

<sup>f</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

R=Revised. E=Estimate. F=Forecast. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: See end of section.

**Table 10.2b Estimated Renewable Energy Consumption:  
Industrial and Transportation Sectors  
(Trillion Btu)**

	Industrial Sector <sup>a</sup>					Transportation Sector
	Hydropower <sup>b</sup>	Wood <sup>c</sup>	Waste <sup>d</sup>	Geothermal <sup>e</sup>	Total	
1973 Total .....	35	1,165	NA	NA	1,200	NA
1974 Total .....	33	1,159	NA	NA	1,192	NA
1975 Total .....	32	1,063	NA	NA	1,096	NA
1976 Total .....	33	1,220	NA	NA	1,253	NA
1977 Total .....	33	1,281	NA	NA	1,314	NA
1978 Total .....	32	1,400	NA	NA	1,432	NA
1979 Total .....	34	1,405	NA	NA	1,439	NA
1980 Total .....	33	1,600	NA	NA	1,633	NA
1981 Total .....	33	1,602	87	NA	1,722	7
1982 Total .....	33	1,516	118	NA	1,667	19
1983 Total .....	33	1,690	155	NA	1,879	35
1984 Total .....	33	1,679	204	NA	1,916	43
1985 Total .....	33	1,645	230	NA	1,908	52
1986 Total .....	33	1,610	256	NA	1,899	60
1987 Total .....	33	1,576	282	NA	1,891	69
1988 Total .....	33	1,625	308	NA	1,965	70
1989 Total .....	28	1,584	200	2	1,814	71
1990 Total .....	31	1,442	192	2	1,667	63
1991 Total .....	30	1,410	185	2	1,626	73
1992 Total .....	31	1,461	179	2	1,672	83
1993 Total .....	30	1,483	181	2	1,696	97
1994 Total .....	62	1,580	199	3	1,844	109
1995 Total .....	55	1,652	195	3	1,905	117
1996 Total .....	61	1,683	224	3	1,971	84
1997 Total .....	58	1,731	184	3	1,976	106
1998 Total .....	55	1,603	180	3	1,841	117
1999 Total .....	49	1,620	171	4	1,843	122
2000 Total .....	42	1,636	145	4	1,828	139
<b>2001</b>						
January .....	2	R 127	14	(s)	144	15
February .....	2	113	11	(s)	127	12
March .....	3	121	13	(s)	137	12
April .....	3	119	13	(s)	135	11
May .....	3	R 114	12	(s)	130	11
June .....	3	R 116	12	(s)	R 131	12
July .....	2	121	12	(s)	136	11
August .....	3	125	12	(s)	R 140	10
September .....	2	R 117	12	(s)	132	12
October .....	2	127	13	(s)	R 142	16
November .....	2	120	14	(s)	R 136	13
December .....	3	122	14	(s)	139	13
<b>Total</b> .....	<b>32</b>	<b>R 1,443</b>	<b>150</b>	<b>5</b>	<b>R 1,630</b>	<b>147</b>
<b>2002</b>						
January .....	3	131	15	(s)	150	13
February .....	3	117	14	(s)	134	12
March .....	3	122	15	(s)	141	12
April .....	4	126	14	(s)	144	12
May .....	4	124	14	(s)	142	14
June .....	3	127	14	(s)	144	12
July .....	3	130	14	(s)	148	15
August .....	2	126	14	(s)	143	14
September .....	2	127	14	(s)	143	15
October .....	3	127	15	(s)	146	17
November .....	5	121	15	(s)	141	20
December .....	6	125	15	(s)	146	19
<b>Total</b> .....	<b>41</b>	<b>1,505</b>	<b>172</b>	<b>5</b>	<b>1,722</b>	<b>174</b>
<b>2003</b>						
January .....	4	116	14	(s)	135	17
February .....	3	119	14	(s)	R 137	20
March .....	4	114	15	(s)	133	17
<b>3-Month Total</b> .....	<b>11</b>	<b>350</b>	<b>42</b>	<b>1</b>	<b>405</b>	<b>54</b>
<b>2002 3-Month Total</b> .....	<b>9</b>	<b>370</b>	<b>44</b>	<b>1</b>	<b>425</b>	<b>37</b>
<b>2001 3-Month Total</b> .....	<b>8</b>	<b>361</b>	<b>37</b>	<b>1</b>	<b>408</b>	<b>39</b>

<sup>a</sup> Industrial sector fuel use, including that at industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See note at end of Section 7.

<sup>b</sup> Conventional hydroelectric power.

<sup>c</sup> Wood, black liquor, and other wood waste.

<sup>d</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

<sup>e</sup> Geothermal heat pump and direct use energy.

<sup>f</sup> Ethanol blended into motor gasoline.

R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: See end of section.

**Table 10.2c Renewable Energy Consumption: Electric Power Sector and Total**  
(Trillion Btu)

	Electric Power Sector <sup>a,b</sup>							Renewable Energy Consumption Total
	Hydropower <sup>c</sup>	Wood <sup>d</sup>	Waste <sup>e</sup>	Geothermal <sup>f</sup>	Solar <sup>g</sup>	Wind <sup>h</sup>	Total	
1973 Total .....	2,827	1	2	43	NA	NA	2,873	4,433
1974 Total .....	3,143	1	2	53	NA	NA	3,199	4,769
1975 Total .....	3,122	(s)	2	70	NA	NA	3,194	4,723
1976 Total .....	2,943	1	2	78	NA	NA	3,024	4,768
1977 Total .....	2,301	3	2	77	NA	NA	2,383	4,249
1978 Total .....	2,905	2	1	64	NA	NA	2,973	5,039
1979 Total .....	2,897	3	2	84	NA	NA	2,986	5,166
1980 Total .....	2,867	3	2	110	NA	NA	2,982	5,494
1981 Total .....	2,725	3	1	123	NA	NA	2,852	5,471
1982 Total .....	3,233	2	1	105	NA	NA	3,341	5,985
1983 Total .....	3,494	2	2	129	NA	(s)	3,627	6,488
1984 Total .....	3,353	5	4	165	(s)	(s)	3,527	6,431
1985 Total .....	2,937	8	7	198	(s)	(s)	3,150	6,033
1986 Total .....	3,038	5	7	219	(s)	(s)	3,270	6,132
1987 Total .....	2,602	8	7	229	(s)	(s)	2,846	5,687
1988 Total .....	2,302	10	8	217	(s)	(s)	2,536	5,489
1989 Total .....	b2,808	b100	b132	b308	b3	b22	b3,372	6,294
1990 Total .....	3,014	129	188	326	4	29	3,689	6,133
1991 Total .....	2,985	126	229	335	5	31	3,710	6,158
1992 Total .....	2,586	140	262	338	4	30	3,360	5,907
1993 Total .....	2,861	150	265	351	5	31	3,662	6,156
1994 Total .....	2,620	152	282	325	5	36	3,420	6,065
1995 Total .....	3,149	125	296	280	5	33	3,889	6,669
1996 Total .....	3,528	138	300	300	5	33	4,305	7,137
1997 Total .....	3,581	137	309	309	5	34	4,375	7,075
1998 Total .....	3,241	137	308	311	5	31	4,032	6,561
1999 Total .....	3,218	138	315	312	5	46	4,034	6,599
2000 Total .....	2,768	134	318	296	5	57	3,579	6,158
2001 January .....	R 189	12	27	26	(s)	4	257	R 463
February .....	R 175	R 9	24	23	(s)	4	235	418
March .....	204	10	27	25	(s)	5	272	470
April .....	R 180	9	27	23	(s)	7	246	438
May .....	R 192	10	27	23	1	6	R 259	447
June .....	207	12	28	23	1	7	277	467
July .....	181	11	29	25	1	6	253	449
August .....	R 189	11	29	25	1	6	260	459
September .....	152	10	27	24	1	5	219	410
October .....	152	10	27	24	(s)	6	220	426
November .....	154	10	26	24	(s)	5	R 220	415
December .....	R 194	11	27	25	(s)	6	263	463
Total .....	R 2,169	R 126	R 324	289	R 6	68	R 2,982	5,324
2002 January .....	216	12	28	25	(s)	8	R 290	496
February .....	R 201	10	24	22	(s)	7	R 264	449
March .....	R 210	12	27	24	(s)	9	282	R 479
April .....	R 244	11	27	22	(s)	11	314	512
May .....	R 270	9	28	24	1	11	R 343	542
June .....	R 284	11	28	22	1	12	R 358	556
July .....	254	12	30	24	1	9	R 331	R 537
August .....	R 208	12	29	24	1	10	283	484
September .....	166	11	28	23	1	8	237	437
October .....	168	11	27	24	(s)	8	238	R 446
November .....	194	11	26	23	(s)	7	261	R 465
December .....	212	12	29	24	(s)	8	285	494
Total .....	R 2,626	135	331	281	R 6	106	R 3,485	R 5,897
2003 January .....	195	15	27	24	(s)	6	267	462
February .....	RF 236	F 11	RF 26	F 22	F (s)	RF 8	RF 303	R 499
March .....	F 274	F 11	F 27	F 27	F (s)	F 10	F 349	542
3-Month Total .....	E 705	E 37	E 80	E 72	E 1	E 24	E 919	1,503
2002 3-Month Total .....	627	34	79	71	1	24	836	1,424
2001 3-Month Total .....	568	31	78	73	1	14	765	1,351

<sup>a</sup> The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>b</sup> Through 1988, data are for consumption at electric utilities only. Beginning in 1989, data also include consumption at independent power producers.

<sup>c</sup> Conventional hydroelectric power.

<sup>d</sup> Wood, black liquor, and other wood waste.

<sup>e</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

<sup>f</sup> Geothermal electricity net generation.

<sup>g</sup> Solar thermal and photovoltaic electricity net generation.

<sup>h</sup> Wind electricity net generation.

R=Revised. E=Estimate. NA=Not available. F=Forecast. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: **Wood and Waste • 1973-1988:** Table 7.3d. • **1989 forward:** Table 7.3b. **Hydropower, Geothermal, Solar, and Wind:** Tables 7.2b and A6.

**Electric Power Sector Total:** Calculated as the sum of the individual fuels.

**Renewable Energy Consumption Total:** Table 10.1. **Forecast values:** Energy Information Administration, Short-Term Integrated Forecasting System. See Note 10 at end of Section 4 for more information about forecast values.

Beginning with the April 2003 *Monthly Energy Review*, electricity net imports derived from hydroelectric power and geothermal energy are no longer included in renewable energy consumption data but continue to be included in total U.S. energy consumption. See Tables 1.3 and 2.6.

# Renewable Energy

## Tables 10.2a and 10.2b Sources

### Wood, Residential

1973–1979: Energy Information Administration (EIA), *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.  
1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.  
1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.  
1985 and 1986: Values interpolated.  
1987: EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2.  
1988: Value interpolated.  
1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.  
1990–2000: EIA, *Renewable Energy Annual*, annual reports, Table 6. Includes revisions published in the EIA, *Annual Energy Review 2000*, Table 10.2a.  
2001 forward: EIA, Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), estimates.

### Wood, Commercial

1973–1979: EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.  
1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.  
1984–EIA, CNEAF, estimate.  
1985–1992: Values interpolated.  
1993–2000: EIA, *Renewable Energy Annual*, annual reports, Table 6. Includes revisions published in the EIA, *Annual Energy Review 2000*, Table 10.2a.  
2001 forward: EIA, CNEAF, estimates.

### Wood, Industrial

1973–1979: EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.  
1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.  
1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.  
1985 and 1986: Values interpolated.  
1987: EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2.  
1988: Value interpolated.  
1989: American Paper Institute, *Fact Sheet on 1990 Energy Use in the U.S. Pulp and Paper Industry* (July 1991), total pulp and paper industry wood consumption, minus nonutility power producers' use of wood to produce electricity (see Table 10.3b).  
1990–2000: EIA, *Renewable Energy Annual 2001* (November 2002), Table B1, and CNEAF staff for subsequent data updates.  
2001 forward: EIA, CNEAF, estimates.

### Waste, Commercial

Table 7.3c

### Waste, Industrial

1981: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).  
1982 and 1983: EIA, CNEAF, estimates for total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).  
1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).  
1985 and 1986: Values interpolated.  
1987: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).  
1988: Value interpolated.  
1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' and nonutility power producers' use of waste to produce electricity (see Tables 10.3a and 10.3b).  
1990–2000: EIA, *Renewable Energy Annual 2001* (November 2002), Table B1, and CNEAF staff for subsequent data updates.  
2001 forward: EIA, CNEAF, estimates.

### Hydroelectric, Commercial

Hydroelectric total (all sectors) from Table 7.2a minus electric power sector hydroelectric from Table 7.2b minus industrial sector hydroelectric from Table 7.2c, times the fossil-fueled steam-electric plants heat rate from Table A6.

### Hydroelectric, Industrial

1973–1978: Federal Power Commission (FPC), Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and FPC, Form FPC-12C, "Industrial Electric Generating Capacity," for all other plants, and Table A6.  
1979—FPC, Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and EIA estimates for all other plants; and Table A6.  
1980–1988: Estimated by EIA as the average generation over the 6-year period of 1974–1979, and Table A6.  
1989 forward: Tables 7.2c and A6.

### Alcohol Fuels

1981: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.  
1982 and 1983: EIA, CNEAF, estimates.  
1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.  
1985 and 1986: Values interpolated.  
1987: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.  
1988: Value interpolated.  
1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.

1990: EIA, *Estimates of U.S. Biomass Energy Consumption*  
1992, Table D1.  
1991: Value interpolated.  
1992: EIA, *Estimates of U.S. Biomass Energy Consumption*  
1992, Table D1.  
1993 forward: EIA, *Petroleum Supply Monthly (PSM)*,  
Tables 2 and 28, and *Monthly Energy Review (MER)* Table  
A1. Ten percent of the “Field Production” of “Oxygenated  
Finished Motor Gasoline” from *PSM* Table 2 is added to the  
“Refinery Input of Fuel Ethanol” from *PSM* Table 28. The  
sum is multiplied by the conversion factor of 3.539 million  
Btu per barrel as shown in the *MER* Table A1.

#### **Geothermal**

1989 forward: John Lund, Oregon Institute of Technology  
Geoheat Center, unpublished data.

#### **Solar**

1989–1991: EIA, CNEAF, estimates.

1992–2000: EIA *Renewable Energy Annual*, annual  
reports, Table 2. Includes revisions published in the EIA,  
*Annual Energy Review 2000*, Table 10.2a and 10.2b.

2001 forward: EIA, CNEAF, estimates.